

REMARKS

Claims 1-31 stand rejected in the subject application. Claims 2, 3, 13, and 23 have been canceled. Claims 1, 12, 20-22, and 28 have been amended. Claims 1, 4-12, 14-22, and 24-31 are pending. The amendments to claims 1, 12, 20-22, and 28 find support throughout the specification, such as at paragraphs [0043] and [0044] of the as-filed specification, and in the original claims. It is submitted that no new matter has been introduced by the amendments to the claims.

A) Rejection of Claims 1-3, 5, 7, 8-13, 17-23, 25, 27, 28, 30, and 31 under 35 U.S.C. § 102(b)

Claims 1-3, 5, 7, 8-13, 17-23, 25, 27, 28, 30, and 31 stand rejected under 35 U.S.C. § 102(b) in view of GB 2 284 059 A Chowienczyk (hereinafter, "Chowienczyk"). Applicants respectfully traverse this rejection.

As amended, independent claims 1, 12, 20, 21, and 28, and the claims that depend therefrom, recite gas sensors, systems, and methods for determining the remaining life of a gas sensor. The gas sensor and systems of claims 1, 12, and 21 recite a controller in communication with the anode and configured to measure sensor current output, wherein the controller is configured to subtract a cumulative current output of the sensor from a theoretical total to determine the remaining life of the sensor. Claim 20 recites gas sensor comprising means for measuring sensor current output at the anode, the means being configured to subtract a cumulative current output of the sensor from a theoretical total to determine the remaining life of the sensor.

Claim 28 recites a method of determining remaining life of a gas sensor by measuring sensor current output by a controller and subtracting a cumulative current output of the sensor from a theoretical total to determine the remaining life of the sensor. The amendments to the claims find support, for example, in the original claims, such as claim 2, 3, 13, and 23.

With respect to claims 2, 3, 13, and 23, the Examiner asserts that "Chowienczyk discloses a controller (Fig.1 (12)) configured to determine the remaining life of the sensor (page 8)." Applicants disagree.

The gas sensor of Chowienczyk, like many conventional gas sensors, measures current or voltage at the anode. The point of novelty, as taught by Chowienczyk, relates to gas sensors having a memory means that allows input of maintenance information, such as the date of manufacture, expected useful life, type of gas sensed, volume concentration, and recommended calibration period. Regarding expected useful life, Chowienczyk, at page 2, describes the disadvantages of prior art sensors and the lack of records maintenance which may lead to the sensor not being used, or being used beyond its normal recommended life period. As set forth at pages 2-3, the problem of prior art gas sensors, as identified by Chowienczyk, relates to gas sensors not being trusted due to the lack of maintenance information. Accordingly, Chowienczyk, at page 3, lines 5-14 proposes a gas sensor apparatus that includes memory means containing maintenance information that allows the user to know that the gas sensor is working in a reliable manner.

Applicants speculate that Chowienczyk determines "expected useful life" based on the gas sensor's date of manufacture, the date of last calibration and the calibration factor. In support of this assertion, it is noted that Chowienczyk, on pages 4-5, states:

...the gas sensor apparatus is one in which the maintenance information in the memory means is of first and second types with the first type of maintenance information being that which is written into the memory means at the time of manufacture of the gas sensor apparatus and which is never changed, and with the second type of maintenance information being that which is updated everytime a calibration is performed.

Accordingly, it is respectfully submitted that, unlike present claims 1-3, 5, 7, 8-13, 17-23, 25, 27, 28, 30, and 31, Chowienczyk does not teach a controller configure to calculate remaining life by subtracting a cumulative current output of the sensor from a theoretical total to determine the remaining useful life of the sensor. There is nothing in Chowienczyk that teaches this relationship.

For a reference to be anticipatory under 35 U.S.C. § 102, it is axiomatic that the reference must teach, either explicitly or inherently, each and every element of the invention as set forth by the claims.

Accordingly, for at least this reason, Chowienczyk not anticipate the claims as amended. As such, Applicants respectfully request withdrawal of the rejection of claims 1-3, 5, 7, 8-13, 17-23, 25, 27, 28, 30, and 31 under 35 U.S.C. § 102(b).

B) Rejection of Claims 4, 14, 15, 24, and 29 under 35 U.S.C. § 103(a)

Previous claims 4, 14, 15, 24, and 29 were rejected under 35 U.S.C. § 103(a) for assertedly being obvious over Chowienczyk in view of U.S. Patent No. 6,565,509 to Say *et al.* (hereinafter, "Say"). Applicants respectfully traverse the rejections, as set forth herein.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the combination of prior art.

Applicants respectfully submit that the combination of Chowienczyk and Say references do not form the basis for an obviousness rejection because neither of the cited references, either alone or in combination, teach all of the claimed elements of the present invention, nor would one of ordinary skill recognize that this combination of elements would lead to the claimed results.

Specifically, for at least the reasons set forth in *Section A*, above, Chowienczyk clearly does not teach or suggest a gas sensor or method wherein a cumulative current output of the sensor may be subtracted from a theoretical total to determine the remaining useful life of the sensor.

Furthermore, Say provides no teaching that when combined with Chowienczyk, would lead one of ordinary skill to the recited gas sensor or methods. Indeed, the Examiner only cites Say for the teaching that data from the sensor and control unit can be encrypted in order to eliminate "crosstalk" and to identify signals from the appropriate control unit. Say, like Chowienczyk, fails to teach or suggest a gas sensor that is

configured such that the cumulative current output of the sensor is subtracted from a theoretical total to determine the remaining useful life of the sensor.

Thus, it is respectfully submitted that claims 4, 14, 15, 24, and 29 are not obvious in view of the combination of teachings of Chowienczyk and Say. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 4, 14, 15, 24, and 29 under 35 U.S.C. § 103(a).

C) Rejection of Claims 6, 16, and 26 under 35 U.S.C. § 103(a)

Previous claims 6, 16, and 26 were rejected under 35 U.S.C. § 103(a) for assertedly being obvious over Chowienczyk in view of U.S. Patent 6,287,519 to Nordman *et al.* (hereinafter, Nordman). Applicants respectfully traverse the rejections as set forth herein.

Applicants respectfully submit that the combination of Chowienczyk and Nordman do not form the basis for an obviousness rejection because neither of the cited references, either alone or in combination, teach all of the claimed elements of the present invention, nor would one of ordinary skill recognize that this combination of elements would lead to the claimed results.

Specifically, for at least the reasons set forth in *Section A*, above, Chowienczyk clearly does not teach or suggest a gas sensor or method wherein a cumulative current output of the sensor may be subtracted from a theoretical total to determine the remaining useful life of the sensor.

Furthermore, Nordman provides no teaching that when combined with Chowienczyk, would lead one of ordinary skill to the recited gas sensor or methods. Indeed, the Examiner only cites Nordman for the teaching of the use of a microcontroller within the gas sensor housing in order to make the sensor handheld and portable for ease of use. Nordman, like Chowienczyk, fails to teach or suggest gas sensors that are configured such that the cumulative current output of the sensor is subtracted from a theoretical total to determine the remaining useful life of the sensor.

Thus, claims 6, 16, and 26 are not obvious in view of the combination of teachings of Chowienczyk and Nordman. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 6, 16, and 26 under 35 U.S.C. § 103(a).

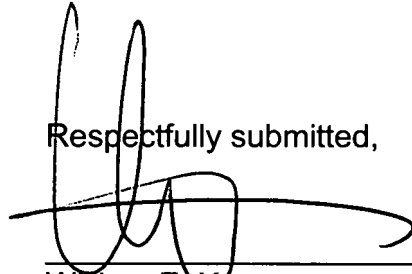
Conclusion

Applicants respectfully submit that claims 1, 4-12, 14-22, and 24-31 of the subject application are novel and nonobvious over the prior art of record and are in proper form for allowance. In view of the foregoing, Applicants respectfully submit that the subject application is in condition for allowance. Accordingly, reconsideration of the rejections and allowance of the claims at an early date are earnestly solicited.

If the undersigned can be of assistance to the Examiner in addressing any additional issues to advance the application to a condition of allowance, please contact the undersigned at the number set forth below.

May 22, 2007
Date

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'W. E. Kuss', written over a horizontal line.

William E. Kuss
Registration No. 41,919
Customer No. 26,285

KIRKPATRICK & LOCKHART PRESTON GATES ELLIS LLP
Henry W. Oliver Building
535 Smithfield Street
Pittsburgh, Pennsylvania 15222
Telephone: (412) 355-6323
Facsimile: (412) 355-6501